Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of the claims in the application.

Listing of Claims:

1. (currently amended)A method for reducing interference between adjacent cells of a cellular radio system, comprising:

(a) in a cell of said cellular radio system, transmitting traffic along a downlink beam to a first user terminal during a first time slot;

(b) rotating said downlink beam by a predetermined angle;

(c) transmitting along said downlink beam to a further user terminal during a second time slot; and

(d) repeating steps (a), (b), and (c) until the entire area of cell is covered;

said predetermined angle being varied in accordance with a predetermined pattern.

2. (original)The method of claim 1, wherein said predetermined angle is a part of the width of said downlink beam.

3. (original)The method of claim 1, wherein said steps (a) through (d) are performed in a cyclic manner.

4. (original)In a cellular communication system of the type where base stations are equipped with directional antennas that can assume one of *I* number of directions of transmissions where $I \geq 2$, a method of increasing downlink coverage and traffic capacity, comprising:

at a first base station, successively directing a first radio beam in *I* number of directions *A(i)* according to a first beam rotation scheme, where $i \in [2, I]$; and

at a second base station adjacent to said first base station, successively directing a second radio beam in *I* number of directions *B(i)* according to a second beam rotation scheme;

wherein said first beam rotation scheme and said second beam rotation scheme form *J* number of reception timeslots *T(j)* for user equipment located within said first radio beam and said second radio beam, each of said reception timeslots *T(j)* having different channel

conditions, and said second base station allocating said reception timeslots *T(j)* according to quality of service requirements of each said user equipment.

5. (original)The method of claim 4, wherein schedulers resident within said first and second base stations make use of changes within said different channel conditions to maximize system capacity via intelligent scheduling.

6. (original)The method of claim 4, wherein schedulers resident within said first and second base stations make use of changes within said different channel conditions to transmit urgent data to selected ones of said user equipment via intelligent scheduling.

7. (original)The method of claim 4, further including the steps of:

associating each said reception timeslot with a given location in a first sector covered by said first radio beam; and

allocating to said user equipment said reception timeslot within said first radio beam whenever said user equipment is in said given location.

8. (original)The method of claim 4, wherein said step of successively directing said first radio beam includes rotating said first beam with a predetermined angle for covering said first sector.

9. (original)The method of claim 8, wherein said predetermined angle is a fraction of the width of said first beam.

10. (original)The method of claim 4, wherein said first radio beam exists within a first cell and said second radio beam exists within a second cell, said first and second radio beams operate according to a cyclic pattern, and a group of non-adjacent cells reuse said cyclic pattern where there are a total of M number of said cyclic patterns.

11. (original)The method of claim 10, wherein $J=I^M$.

12. (original)The method of claim 5, wherein each said reception timeslot *T(j)* is selected to maximize the C/I ratio for a location where said first sector overlaps with a second sector

covered by said second radio beam according to quality of service requirements dictated by each said user equipment.

13. (original)The method of claim 4, wherein said first beam rotation scheme and said second beam rotation scheme use orthogonal cyclic patterns.

14. (original)The method of claim 4, further including the step of reusing said first beam rotation scheme at a further base station that is not adjacent with said first base station.

15. (original)The method of claim 4, further including the steps of:

determining an appropriate quality of service level for each of said reception timeslots at each said user equipment in said first radio beam; and

allocating to each said user equipment, a time slot in said first radio beam corresponding to quality of service requirements of each said user equipment.

16. (original)The method of claim 15, wherein said step of determining an appropriate quality of service level includes:

measuring pilot power values for each orientation *A(i)* of said first radio beam and advising said first base station of said pilot power values and selectively of a current location of said user equipment.

17. (original)The method of claim 16, wherein said step of measuring pilot power values includes averaging said pilot power values over a plurality of reception timeslots so as to minimize impact of temporary fading.

18. (original)The method of claim 15, wherein said step of determining an appropriate quality of service level includes:

measuring C/I ratios of different reception timeslots in said first radio beam and advising said first base station of said C/I ratios and a current location of said user equipment.

19. (original)The method of claim 15, wherein said first base station allocates to each said user equipment in said first sector a respective reception timeslot with a preset C/I ratio so as to optimize scheduling.

20. (original)The method of claim 4, wherein said second rotation scheme does not require synchronization with said first rotation scheme.

21. (original)A method for controlling interference between first and second traffic carrying beams of adjacent cells of a cellular radio system, said method comprising:

(a) rotating a first beam along a plurality of successive orientations according to a first rotation scheme;

(b) rotating a second beam along a plurality of successive orientations according to a second rotation scheme;

(c) identifying different timeslots with varying quality created by said first and second rotation schemes; and

(d) selecting a reception timeslot from said different timeslots that corresponds to an optimal C/I ratio for user equipment residing within a location covered by both said first and second beams.

22. (currently amended)The method of claim ~~20~~ 21, wherein steps (c) and (d) include using orthogonal cyclic patterns for said first rotation scheme and said second rotation scheme.

23. (currently amended)The method of claim ~~20~~ 21, wherein steps (c) and (d) include:

differentiating said reception timeslot in said first radio beam and said second radio beam;

associating each said reception timeslot with a respective location in a first sector covered by said first radio beam; and

allocating to user equipment a reception timeslot in said first radio beam so as to maximize overall system capacity and coverage performance based on channel quality conditions of said different timeslots for said user equipment.